AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit.

2. (Original) The data storage system of claim 1:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

3. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

4. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

5. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

6. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

7. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

8. (Currently Amended) ~~The data storage system of claim 1:~~ A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n > is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

9. (Currently Amended) An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

10. (Original) The apparatus of claim 9:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

11. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

12. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

13. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

14. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

15. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

16. (Currently Amended) ~~The apparatus of claim 9:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n~~>~~ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

17. (Currently Amended) An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

18. (Original) The integrated circuit of claim 17:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

19. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

20. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

21. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

22. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

23. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

24. (Currently Amended) ~~The integrated circuit of claim 17:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

25. (Currently Amended) A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means.

26. (Original) The data storage system of claim 25:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

27. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

28. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

29. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

30. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

31. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

32. (Currently Amended) ~~The data storage system of claim 25:~~ A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means,

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

33. (Currently Amended) An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

34. (Original) The apparatus of claim 37:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

35. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

36. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

37. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

38. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

39. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

40. (Currently Amended) ~~The apparatus of claim 33:~~ An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n > is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

41. (Currently Amended) An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

42. (Original) The integrated circuit of claim 41:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

43. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

44. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

45. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes;

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

46. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

47. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

48. (Currently Amended) ~~The integrated circuit of claim 41:~~ An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

49. (Currently Amended) A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes.

50. (Currently Amended) The method of claim 49:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

51. (Currently Amended) ~~The method of claim 49:~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

52. (Currently Amended) ~~The method of claim 49:~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

53. (Currently Amended) ~~The method of claim 49,~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes;

wherein a plurality of symbols of data are stored on the storage medium, further comprising:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

54. (Currently Amended) ~~The method of claim 49,~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, further comprising:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

55. (Currently Amended) ~~The method of claim 49,~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, further comprising

taking samples of the pulse at n times the baud rate of the symbols of the data, where n > is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

56. (Currently Amended) ~~The method of claim 49,~~ A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, further comprising

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ~~>~~ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

57. (Original) The method of claim 49, further comprising:

controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium.

58. (Original) The method of claim 49, further comprising:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.

59. (Currently Amended) A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse in a time domain at a first predetermined time and one or more second amplitudes of the pulse in the time domain at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes.

60. (Original) The computer program of claim 59:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

61. (Currently Amended) ~~The computer program of claim 59:~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

62. (Currently Amended) ~~The computer program of claim 59:~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of ~~the~~ at least two second amplitudes.

63. (Currently Amended) ~~The computer program of claim 59,~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

64. (Currently Amended) ~~The computer program of claim 59,~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

65. (Currently Amended) ~~The computer program of claim 59,~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

66. (Currently Amended) ~~The computer program of claim 59,~~ A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes,

wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n ≥ is an integer greater than 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

67. (Original) The computer program of claim 59, wherein the method further comprises:

controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium.

68. (Original) The computer program of claim 59, wherein the method further comprises:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.

Please cancel Claims 69-104.